

# Resource leveling



Resource Leveling Resource leveling is the process that ensures resource demand does not exceed resource availability. The ideal scenario would be a build up of resource usage at the beginning of the project and a reduction at the end of the project. However, the approach to resource leveling will also depend on whether resources are dedicated to a particular project or shared across several projects and whether there is a need to keep all resources fully utilized. Introduction: Resource leveling is a technique in project management that overlooks resource allocation and resolves possible conflict arising from over allocation.

When project managers undertake a project, they need to plan their resources accordingly. This will benefit the organization without having the face conflicts and not being able to deliver on time. Resource leveling is considered one of the key elements to resource management in the organization. An organization starts to face problems if resources are not allocated properly i. e. some resource may be over allocated whilst others will be under allocated. Both will bring about a financial risk to the organization. The Two Key Elements of Resource Leveling:

As the main aim of resource leveling is to allocate resource efficiently, so that the project can be completed in the given time period. Hence, resource leveling can be broken down into two main areas; projects that can be completed by using up all resources which are available and projects that can be completed with limited resources. Projects which use limited resources can be extended for over a period of time until the resources required are available. If then again, the number of projects that an

organization undertakes exceeds the resources available. Then it's wiser to postpone the project for a later date.

Structure of Resource Leveling: Many organizations have a structured hierarchy of resource leveling. A work based structure is as follows. \* Stage \* Phase \* Task/ Deliverable All of the above mentioned layers will determine the scope of the project and find ways to organize tasks across the team. This will make it easier for the project team to complete the tasks. In addition, depending on the three parameters above, the level of the resources required (seniority, experience, skills, etc. ) may be different. Therefore, the resource requirement for a project is always a variable which is corresponding to the above structure.

Establishing Dependencies: The main reason for a project manager to establish dependencies is to ensure that tasks get executed properly. By identifying correct dependencies from that of incorrect dependencies allows the project to be completed within the set time-frame. Here are some of the constraints that a project manager will come across during the project execution cycle. The constraints a project manager will face can be categorized into three categories. \* Mandatory: These constraints arise due to physical limitations such as experiments. \* Discretionary: These are constraints based on preferences or decisions taken by teams. External: Often based on needs or desires involving a third party. The Process of Assigning Resources: For resource leveling to take place, resources are delegated with tasks (deliverables) which needs execution. During the starting phase of a project, idealistically the roles are assigned to resources (human resources) at which point the resources are not identified. Later

these roles are assigned to specific tasks which require specialization. Leveling of Resources Resource leveling helps an organization to make use of the available resources to the maximum. The idea behind resource leveling is to reduce wastage of resources i. . to stop over allocation of resources. Project manager will identify time that is unused by a resource and will take measures to prevent it or making an advantage out of it. By resource conflicts, there are numerous disadvantages suffered by the organization, such as: \* Delay in certain tasks being completed \* Difficulty in assigning a different resource \* Unable to change task dependencies \* To remove certain tasks \* To add more tasks \* Overall delays and budget overruns of projects Resource leveling Techniques: Critical path is a common type of technique used by project managers when it comes to resource leveling.

The critical path represents for both the longest and shortest time duration path in the network diagram to complete the project. However apart from the widely used critical path concept, project manager's use fast tracking and crashing if things get out of hand. \* Fast tracking: This performs critical path tasks. This buys time. The prominent feature of this technique is that although the work is completed for the moment, possibility of rework is higher. \* Crashing: This refers to assigning resources in addition to existing resources to get work done faster.

Associate with additional cost such as labor, equipment etc. Conclusion: Resource leveling is aimed at increasing efficiency when undertaking projects by utilizing the resources available at hand. Proper resource leveling will not result in heavy expenditure. The project manager needs to take into

account several factors and identify critical to non critical dependencies to avoid any last minute delays of the project deliverables. Why is there a need for resource leveling? If resources are not leveled, resources are either over allocated or under allocated (or both).

Overallocation means the scheduled work is not likely to occur (or the resource may be annoyed, overworked or burned out). Under allocation means suboptimal utilizing and billing of resource, lowering of profitability. Lastly, your schedule won't be accurate, unless resources are correctly loaded. Over-allocation can occur as the result of various events: \* Increased work on a task that causes the finish date to overlap with another already assigned task. \* A forecasted finish that causes a task to slip also delaying a successor dependency to start late. Full time assignments to tasks that start and end at the same time or overlap. In the perfect world of dedicated project resources, resolving these conflicts is more a decision of whether the project schedule has sufficient slack to accommodate leveling or whether the current schedule is not constrained by hard finish dates. In organizations that share resources across projects the contention for critical resources and trying to ensure that they are aligned with most important initiatives often leaves project plans with over-allocations that are not only impossible to meet but also impossible to deliver.

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